ICANWK525A Configure an enterprise virtual computing environment

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| Unit descriptor | This unit describes the performance outcomes, skills and knowledge required to develop and implement virtualisation technologies with the goal of providing a more efficient and reliable information and communications technology (ICT) environment.  No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement but users should confirm requirements with the relevant federal, state or territory authority. |
| Employability skills | This unit contains employability skills. |
| Application of the unit | This unit applies to senior networking staff responsible for increasing the sustainability of an organisation by using virtualisation technologies. |
| Unit sector | Networking |
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| ELEMENT | PERFORMANCE CRITERIA |
| Elements describe the essential outcomes of a unit of competency. | Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide. |
| 1. Configure and manage virtual environment | * 1. Obtain technical specifications and system requirements from virtualisation-software vendors   2. Review Prerequisites ***environment***al ***requirements*** for Installation of virtualisation-software   3. Install and configure ***prerequisites services*** and ports according to virtualisation-software vendors   4. Install and configure virtualisation client and server management software, according to ***organisational requirements***   5. Install, configure and manage environmental requirements to ensure virtual machines function   6. Configure and manage virtual machines using remote client management software |
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| 1. Design, configure and manage virtual networks | * 1. Plan and design virtual network according to clients’ needs   2. Install and configure virtual networks   3. Verify functionality of virtualisation network according to organisational requirements |
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| REQUIRED SKILLS AND KNOWLEDGE | |
| This section describes the skills and knowledge required for this unit. | |
| Required skills | |
| * communication skills to: * convey and clarify information   liaise with clients   * initiative and enterprise skills to proactively minimise, control or eliminate hazards that may exist during work activities * literacy skills to: * develop and document virtualisation configurations and processes   record researched information   * planning skills to plan methods for integrating and maintaining a virtualised machine environment * problem-solving skills to: * apply solutions in networks, including virtualised machine environments   deploy rapid deployment of solutions to problems involving virtualised machine environment   * technical skills to apply current best practice to implementing sustainability options through virtualisation methodologies and technologies | |
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| Required knowledge | |
| * overview knowledge of: * current government and industry policies and guidelines related to developing efficient and reliable ICT environments * current technologies and processes designed to produce a efficient and reliable ICT environment * available tools and software applications required to manage virtual machines * configuration of software applications required to manage virtual machines * configuration required to integrate virtual machines into existing network design * structure, function and business organisation of client | |
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| RANGE STATEMENT | |
| The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.  ***prerequisites services include and not limited to:***   * ***Microwsoft.net*** * ***Windows installers*** * ***DNS*** * ***Database severer*** | |
| Management software may include: | * Citrix Essentials for Hyper-V * Citrix XenServer Management Console * Microsoft Hyper-V * Microsoft Systems Center Virtual Machine Manager * Parallels H-Sphere |
|  | * VMware Infrastructure Client * VMware vCenter Lab Manager * VMware vSphere Client * vSphere client and host update utility. |
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| Environmental requirements may include: | * available memory (RAM) * available storage (hard disks) * central processing unit (CPU) loads * physical environmental factors, such as ventilation and cooling * power requirements. |
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| Organisational requirements may include: | * preventative maintenance and diagnostic policy * problem solution processes * roles and technical responsibilities in network management * vendor and product service level support agreements * work environment. |
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| Remote client management software may include: | * Microsoft Hyper-V * Microsoft Systems Center Virtual Machine Manager * VMware Infrastructure Client * VMware vCenter Lab Manager * VMware vSphere Client. |
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| Virtual networks may include: | * bridged networks * host only networks * private virtual local area network (VLANs) * those using network address translation (NAT). |
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| Functionality may include: | * connectivity to a physical network * connectivity to a specific VLAN on a physical network * connectivity within a local host-only network * local area network (LAN) and wide area network (WAN) connectivity. |
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| EVIDENCE GUIDE | |
| The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package. | |
| Critical aspects for assessment and evidence required to demonstrate competency in this unit | Evidence of the ability to:   * install, configure and test virtual machines * manage environmental requirements   install and use software tools. |
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| Context of and specific resources for assessment | Assessment must ensure access to:   * site or prototype where virtual machine environments may be implemented * network technical requirements * software   appropriate learning and assessment support when required.  Where applicable, physical resources should include equipment modified for people with special needs. |
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| Method of assessment | A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:   * verbal or written questioning to assess candidate’s knowledge of emerging policies related to: * current recommendations on sustainability options in ICT design * benefits of virtualisation * installation and configuration of virtualisation software * installation and configuration of virtual machines   configuration of virtual machines into network design   * direct observation of candidate demonstrating: * installation and configuration of virtualisation software * installation and configuration of virtual machines   configuration of virtual machines into network design   * review of documentation prepared by candidate to: * record the configuration of virtual machines   record the process of configuration of virtual machines. |
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| Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, where appropriate.  Assessment processes and techniques must be culturally appropriate, and suitable to the communication skill level, language, literacy and numeracy capacity of the candidate and the work being performed.  Indigenous people and other people from a non-English speaking background may need additional support.  In cases where practical assessment is used it should be combined with targeted questioning to assess required knowledge. |

ICANWK526A Install an enterprise virtual computing environment

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| Unit descriptor | This unit describes the performance outcomes, skills and knowledge required to development and implement virtualisation technologies with the goal of providing a more efficient and reliable information and communications technology (ICT) environment.  No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement but users should confirm requirements with the relevant federal, state or territory authority. |
| Employability skills | This unit contains employability skills. |
| Application of the unit | This unit applies to senior networking staff responsible for increasing the sustainability of an organisation by using virtualisation technologies. |
| Unit sector | Networking |
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| ELEMENT | PERFORMANCE CRITERIA |
| Elements describe the essential outcomes of a unit of competency. | Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide. |
| 1. Analyse client needs | * 1. Assess client requirements   2. Assess existing client or server systems that may be suitable to be virtualised |
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| 1. Analyse virtualisation host software | * 1. Assess and compare suitable virtualisation host software according to ***organisational requirements***   2. Document recommendations and provide to appropriate person |
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| 1. Evaluate system requirements | * 1. Obtain and document technical specifications, licensing and system requirements from virtualisation-software vendors   2. Compare the system requirements needed to implement virtualisation   3. Document recommendations and provide to appropriate person |
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| 1. Install virtualisation host software | * 1. Install virtualisation host platform   2. Validate functionality of the virtualisation host platform according to organisational requirements |
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| REQUIRED SKILLS AND KNOWLEDGE | |
| This section describes the skills and knowledge required for this unit. | |
| Required skills | |
| * communication skills to: * liaise with clients   convey and clarify information   * initiative and enterprise skills to proactively minimise, control or eliminate hazards that may exist during work activities * literacy skills to: * record researched information   develop and document virtualisation configurations and processes   * planning skills to plan methods for integrating and maintaining a virtualised machine environment * problem-solving skills to: * apply solutions in networks, including virtualised machine environments   deploy rapid solutions to problems involving virtualised machine environment   * technical skills to apply current best practice to implementing sustainability options through virtualisation methodologies and technologies | |
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| Required knowledge | |
| * overview knowledge of: * current government and industry policies and guidelines related to developing efficient and reliable ICT environments   current technologies and processes designed to produce a efficient and reliable ICT environment   * structure, function and business organisation of client * available tools and software applications required to manage virtual machines * configuration of software applications required to manage virtual machines * configuration required to integrate virtual machines into existing network design | |
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| RANGE STATEMENT | |
| The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included. | |
| Client may include: | * external organisation * individual * internal department * internal employee. |
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| Systems may include: | * servers * thin client terminals * workstations. |
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| Host software may include: | * Citrix XenServer * KVM * Microsoft Hyper-V Server * Microsoft Virtual PC * Microsoft Virtual Server * Oracle VM VirtualBox * parallels desktop for Mac * parallels server for Mac * VMware ESX Server * VMware ESXi Server * VMware Player * VMware Server * VMware VSphere * VMware Workstation * Windows Virtual PC. |
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| Appropriate person may include: | * authorised business representative * client * supervisor. |
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| System requirements may include: | * hard disk capacity and speed * minimum random access memory (RAM) * motherboard architecture * number of cores in central processing unit (CPU) * number of network interface cards * number of physical CPUs * speed of CPU |
|  | * storage and hard disk interface requirements: * internet small computer systems interface (ISCSI) * redundant array of inexpensive or independent disks (RAID) * statistical analysis system (SAS) * small computer system interface (SCSI)   serial advanced technology attachment (SATA)   * virtualisation technology at the central processing unit level (VT(x)) support. |
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| Virtualisation software vendors may include: | * Citrix * KVM * Microsoft * Oracle * Parallels * VMware. |
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| Organisational requirements may include: | * how and what the organisation wants regarding the work environment * preventative maintenance and diagnostic policy * problem-solving processes * roles and technical responsibilities in network management * vendor and product service level support agreements. |
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| Functionality may include: | * availability of services * virtualised services performing the same as a service running on physical hardware. |
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| EVIDENCE GUIDE | |
| The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package. | |
| Critical aspects for assessment and evidence required to demonstrate competency in this unit | Evidence of the ability to:   * analyse, evaluate, recommend and install an enterprise virtual computing environment. |
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| Context of and specific resources for assessment | Assessment must ensure access to:   * site or prototype where virtual machine environments may be implemented * network technical requirements |
|  | * software   appropriate learning and assessment support when required.  Where applicable, physical resources should include equipment modified for people with special needs. |
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| Method of assessment | A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:   * verbal or written questioning to assess candidate’s knowledge of: * current recommendations on sustainability options in ICT design * benefits of virtualisation * installation and configuration of virtualisation software * installation and configuration of virtual machines   configuration of virtual machines into network design   * direct observation of candidate demonstrating: * installation and configuration of virtualisation software * installation and configuration of virtual machines   configuration of virtual machines into network design   * review of documentation prepared by candidate to:   record research of current recommendations on sustainability options in ICT design and the benefits of virtualisation. |
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| Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, where appropriate.  Assessment processes and techniques must be culturally appropriate, and suitable to the communication skill level, language, literacy and numeracy capacity of the candidate and the work being performed.  Indigenous people and other people from a non-English speaking background may need additional support.  In cases where practical assessment is used it should be combined with targeted questioning to assess required knowledge. |

ICANWK527A Manage an enterprise virtual computing environment

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| Unit descriptor | This unit describes the performance outcomes, skills and knowledge required to manage virtualisation technologies with the goal of providing a more efficient and reliable information and communications technology (ICT) environment.  No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement but users should confirm requirements with the relevant federal, state or territory authority. |
| Employability skills | This unit contains employability skills. |
| Application of the unit | This unit applies to senior networking staff responsible for managing virtualisation technologies. |
| Unit sector | Networking |
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| ELEMENT | PERFORMANCE CRITERIA |
| Elements describe the essential outcomes of a unit of competency. | Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide. |
| 1. Manage resources | * 1. Monitor and adjust resources to ensure virtual environment performance functions according to organisational requirements   2. Verify functionality of virtual environment |
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| 1. Manage virtual machines | * 1. Use migration tools to convert a physical machine to a virtual machine   2. Determine the appropriate deployment methods for a virtual machine   3. Create and deploy a virtual machine using installation media   4. Create and deploy a virtual machine using automated templates   5. Use virtual machine snapshots to reverse or implement changes to a virtual machine |
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| 1. Ensure high availability | * 1. Plan and design strategy to insure virtual environment high availability   2. Determine the required resources for high availability implementation according to organisational requirements   3. Configure virtual machine environment to ensure high availability   4. Configure virtual machine environment to provide live migration   5. Plan and design backup strategy   6. Back up and recover a virtual machine   7. Utilize and integrate third Party Tools into the Backup and recovery of virtual machine environment |
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| REQUIRED SKILLS AND KNOWLEDGE | |
| This section describes the skills and knowledge required for this unit. | |
| Required skills | |
| * communication skills to: * convey and clarify information   liaise with clients   * literacy skills to: * document virtualisation configurations and processes   record researched information   * planning skills to plan methods for maintaining a virtualised machine environment * problem-solving skills to: * apply solutions in networks, including virtualised machine environments * deploy rapid deployment of solutions to problems involving virtualised machine environment   proactively minimise, control or eliminate hazards that may exist during work activities   * technical skills to apply current best practice to managing virtualisation methodologies and technologies | |
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| Required knowledge | |
| * in-depth knowledge of: * current government and industry policies and guidelines in relation to developing efficient and reliable ICT environments * current technologies and processes designed to produce a efficient and reliable ICT environment   structure, function and business organisation of client   * application and deployment of virtual machine management tools * virtual machine configuration and integration options | |
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| RANGE STATEMENT | |
| The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included. | |
| Resources may include availability of: | * central processing unit (CPU) cores * CPU speed * hard disk space (storage) * memory (RAM) * network bandwidth * physical CPUs * CPU load to be shared. |
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| Organisational requirements may include: | * how and what the organisation wants regarding work environment * preventative maintenance and diagnostic policy * problem-solving processes * roles and technical responsibilities in network management * vendor and product service level support agreements. |
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| Functionality may include: | * availability of services on a virtual machine * virtualised services performing the same as a service running on physical machine. |
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| Migration tools may include: | * AutoVirt AutoMove * Leostream * Microsoft System Center Virtual Machine Manager (SCVMM) * Microsoft Virtual Server 2005 Migration Toolkit * PlateSpin Migrate * Virtuozzo * Vizioncore vConverter * VMware Converter * VMware P2V Converter * VMware vCenter Converter. |
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| Physical machine may include: | * laptop or notebook * server * workstation. |
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| Installation media may include: | * blu-ray disk * CD * DVD * floppy disk * ISO image * network share * universal serial bus (USB) flash drive. |
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| Snapshots may include: | * stored virtual machine configuration to allow: * the rollback of changes to a virtual machine   the implementation of instant changes to a virtual machine. |
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| High availability may relate to use of: | * clustered virtual machines performing an identical task * load balancing between virtual machines to ensure service requirements are being met * pre-configured virtual machines that can be rapidly stored and deployed in the event of a system failure * standby power solutions in the event of a power disruption. |
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| EVIDENCE GUIDE | |
| The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package. | |
| Critical aspects for assessment and evidence required to demonstrate competency in this unit | Evidence of the ability to:   * monitor and provide resources to virtual environment * create and deploy virtual machines * implement changes to virtual machines   back up and recover a virtual machine. |
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| Context of and specific resources for assessment | Assessment must ensure access to:   * site or prototype where virtual machine environments may be implemented * network technical requirements * appropriate software   appropriate learning and assessment support when required.  Where applicable, physical resources should include equipment modified for people with special needs. |
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| Method of assessment | A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:   * verbal or written questioning to assess candidate’s knowledge of emerging policies related to: * current recommendations on sustainability options in ICT design * benefits of virtualisation * installation and configuration of virtualisation software * installation and configuration of virtual machines   configuration of virtual machines into network design   * direct observation of candidate demonstrating: * installation and configuration of virtualisation software * installation and configuration of virtual machines   configuration of virtual machines into network design   * review of documentation prepared by candidate to: * record the process of installing and configuring virtual machines   document the system. |
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| Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, where appropriate.  Assessment processes and techniques must be culturally appropriate, and suitable to the communication skill level, language, literacy and numeracy capacity of the candidate and the work being performed.  Indigenous people and other people from a non-English speaking background may need additional support.  In cases where practical assessment is used it should be combined with targeted questioning to assess required knowledge. |